



10th INTERNATIONAL AMATEUR RADIO MOON-BOUNCE CONFERENCE

PRAGUE - CZECH REPUBLIC - HEART OF EUROPE - AUGUST 2002

Forum Discussion – ‘Digital’ EME Communication

This discussion is about modes such as JT44, PUA43 and any successors, which:

- Are designed for DX working;
- Use a narrow bandwidth (typically 500Hz or less); and
- Use computer decoding (as distinct from the human ear and brain).

1 *The ‘Opinion Poll’*

The conference organizers made some proposals as a basis for an ‘opinion poll’. This is a summary:

1. Frequency allocation – In different IARU regions, the band plans are not the same. Let us try to find somewhere for digital DX modes in the first 100-150kHz of each band. Let’s try to keep it that simple.

2. Sequencing – Sequences for digital EME communication should follow the usual EME convention, i.e. the Eastern station starts first period.

3. Awards etc. – let us try to distinguish between contacts made by ‘Analogue’ modes (CW, SSB) and ‘Digital’ modes (as defined above). The HF operators have applied this without any problem.

The results were:

- For the proposals – 43 (of whom, 3 suggested frequencies above .150)
- Against the proposals – 5
- Don’t know – 8

Of the people who voted, 19 (33%) had experience with digital EME communication and 37 (66%) had not.

2 *The Discussion*

2.1 *Opening remarks*

We started the discussion **after** everybody had seen the results of the poll.

The original proposals were about ‘digital EME modes’ that have the 3 characteristics identified above. Although most of the discussion was specifically about JT44, we need to remember that the same conclusions will apply to all similar modes.

The people at the conference could not make decisions for other EMEers. In the end, EMEers around the world will ‘vote’ by what they actually do. On the other hand, this was the largest gathering of EMEers in history, so it was more representative (or less unrepresentative, depending on your viewpoint) than any other forum so far.

This is not a word-for-word record of the discussion. It was very long, and many of the topics were revisited several times. We will list some of the points made, and try to organize them into a more related order than the way it actually happened.



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2.2 General points

These points were raised by various individual speakers... but not necessarily agreed by others! Please read them and make your own judgements.

“Digital EME modes have enormous potential to attract new stations.”

“There should be separate lists of initials, countries etc. for analogue modes and digital modes.”

“Weak-signal CW is not just a technology – it is a human operating skill. Many people actually want to listen to the signals, and make themselves part of the decoding system.”

“If JT44 is better than CW, then it is unfair to mix the lists.”

“The rules for awards are made by large organizations such as ARRL. They do distinguish between various modes, and CW-only is one of the endorsements available. In most programmes, CW + JT44 would qualify only for a ‘mixed mode’ award.”

“If JT44 is an advantage to small stations, it is also an advantage to the big guns, who can still be the first to work them.”

“I will get onto JT44 to give EME QSOs to new small stations, but I will also encourage them to improve their stations and come on CW. I will personally keep separate lists of initials.”

“By the time of the next EME conference, the majority will be using digital EME modes and we will be talking about ‘us’, not ‘them’.”

“We EMEers have always been at the cutting edge. We should embrace these new technologies – if not for our own use, then at least in principle.”

“This is not just about JT44, or digital modes or even EME. The more general problem for all of amateur radio is how we handle new developments, while still respecting traditional skills and experience.”

“Moonbounce enjoys a privileged position which is justified by the respect we earn, by being leaders in technology and operating skills. Others will be watching how we handle this problem. We are on trial here.”

Further points:

- Nobody in the forum raised any objection to the basic validity of digital EME QSOs. Everywhere else in amateur radio, digital-mode QSOs have always been accepted.
- We could not find perfect one-word names for the modes we were talking about! Among the terms that do not quite work are: ‘human/computer’, ‘visual/aural’, ‘digital/analogue’. Any simple term has to be understood as being short for a longer description.

2.3 Frequencies

There are many problems here. The main one was that this forum could not make a definitive decision because it only represents the EME interest. IARU¹ is the only effective mechanism for consulting all interests, all around the world. To retain respect from other band users, we have to work through IARU.

¹ Readers in some parts of the world may not understand the emphasis on IARU. In Europe, IARU is a major force because it co-ordinates amateur band-planning between more than 50 independent countries.



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Therefore any agreements at the conference would have to be **temporary recommendations, subject to later change through IARU.**

The general points made were:

"Before we leave here, we need to find frequencies to concentrate the activity that is beginning on JT44."

"We should try to avoid QRM between digital modes and CW by using frequencies above 144.150, and so on for the higher bands" (but see below).

"I want to be able to switch between CW, SSB and JT44 on the same frequency" (but this is contrary to all band plans when operating in the CW segment).

Over lunchtime, a group identified the common frequencies that were available on all continents on 144, 432 and 1296MHz. When the full discussion resumed, it was agreed that a centre of activity for JT44 could not be in an area of high SSB activity, and most people felt that it should not be in the areas of most EME CW activity.

Surprisingly, 144MHz seemed to be the easiest to resolve. Subject to consultation through IARU, 144.150-160MHz seemed OK. Finally, **144.150MHz was agreed², strictly as a temporary recommendation.**

The higher bands were more difficult, because in some continents the SSB calling frequency is at .100. On 432MHz, there is probably no world-wide empty gap above .100, so it seemed that any world-wide frequency for JT44 EME would have to be inside the existing CW sub-band.

K2UYH's proposal for 432.024MHz was felt to be too low, because contest CW activity always spreads up to about .030. N6TX's proposal for **432.044MHz was adopted³, strictly as a temporary recommendation, and the same for all higher bands.**

Once again – **these are temporary recommendations.** They are not only for JT44, but also for any other similar modes.

With all respect, '44' has no serious justification. The best we can say is that this frequency will do little harm to other interests. If more consideration produces a frequency that is workable and has some real arguments in its favour, then we should not hesitate to move.

² By a large majority.

³ 38 for, 10 against.



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3 *The Way Forward*

The proposal to use a non-CW mode below .100 is contrary to the existing IARU band plans (at least in Region 1). The only excuses are:

- New technology has overtaken the existing band plans – IARU is already aware of this problem
- There was nowhere else to go (or nowhere better was suggested on the day)
- We immediately handed the problem over to IARU.

There were three national VHF Managers in the forum, and they will take this discussion forward to their next Region 1 meeting in November 2002.

Ian, G3SEK and Dan, OK1DIG

September 2002